

Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of)
)
Revisions of Part 2 and 15 of the Commission's) ET Docket No. 03-122
Rules to Permit Unlicensed National Information)
Infrastructure(U-NII) Devices in the 5 GHz Band)

**Petition for Clarification or Reconsideration
of GlobespanVirata, Inc.**

Pursuant to Section 1.429(a) of the Commission's Rules, GlobespanVirata, Inc. (GSPN) submits this petition for clarification and, if necessary, reconsideration of the Report and Order in the above-captioned proceeding.¹ GSPN is a leading provider of DSL and wireless networking chip sets, software, and reference designs to leading global manufacturers of broadband access and wireless networking equipment. GSPN applies the industry's longest history in DSL and wireless networking development and deployment to support more than 400 customers.

GSPN supports the allocation and rules in the Report and Order. Our sole concern is whether a U-NII device equipped with dynamic frequency selection (DFS) must detect and avoid frequency-hopping radars along with fixed-frequency radars.

Clarification requests are due today, February 19. Although we believe the details of the certification test requirements will be reconciled some time after this date within the joint industry/Government 5 GHz Project Team, we wish to place a concern with the current test plan procedures on the Commission's record.

¹ *Unlicensed National Information Infrastructure (U-NII) Devices in the 5 GHz Band*, 18 FCC Rcd 24484 (2003) (Report and Order).

SUMMARY

The Commission should clarify its rules to state that DFS-equipped U-NII devices are not required to detect and avoid frequency-hopping radars in the 5.25-5.35 and 5.470-5.725 GHz bands.

Where most other radars pulse repetitively at a fixed frequency, a frequency-hopping radar pulses a few times at one frequency and then at another, moving its signal in pseudo-random hops over the band. There are two compelling reasons to exempt these radars from the DFS detection and avoidance requirement. First, a U-NII device should not cause harmful interference to a frequency-hopping radar. Even if the U-NII device's operating frequency coincided with one of the multiple frequencies used by the radar, the other radar frequencies would typically be unaffected, so the radar should continue to function successfully. Second, application of the DFS rules to frequency-hopping radars could make U-NII operation impossible. Section 15.407(h)(2)(iv) requires a U-NII device to avoid a radar frequency for a full 30 minutes after detection. Application of the rule to each of the multiple frequencies visited by a frequency-hopping radar would make large parts of the band unavailable for lengthy periods of time, and in some cases could shut down U-NII operation entirely. That would undermine the intent of this proceeding.

GSPN believes the Commission intended to exclude frequency-hopping radars from the DFS requirements. We seek clarification of that point. If the Commission did not so intend, then we seek reconsideration to reach the same result.

In the alternative, if U-NII devices must detect and avoid frequency-hopping radars, then we request reconsideration of the applicable radar test signal and the certification criteria relating to that signal. The Commission should refer these issues to the joint industry/Government 5

GHz Project Team, and limit certification requirements to fixed-frequency radar systems until the issues are resolved.

We request expedited action on this petition. Manufacturers need the guidance requested here at the earliest possible date.

DISCUSSION

In accordance with WRC-03, the Commission has allocated 5.470-5.725 GHz to unlicensed U-NII operation.

Equipment for both this band and the pre-existing U-NII band at 5.25-5.35 GHz is required to have a DFS function, including a capability for detecting specified radar signals.² The Commission acknowledges that these technical specifications are likely to change over time, and has adopted only an interim procedure for now.³

Industry is committed to achieving the intent of the DFS specifications -- *i.e.*, to ensuring negligible impact to primary users. In that spirit, we have sought to provide our viewpoint when needed, and we will continue efforts to reach compromise and consensus that accommodate the needs of the primary user, while attempting to keep the impact on U-NII cost and product viability to practicable levels.

The only element of the Report and Order that threatens this balance is the application of the DFS requirement to a frequency-hopping radar test signal as defined in Appendix C.

Both ETSI EN 301 893 and Appendix C state:

² Report and Order at para. 32; 47 C.F.R. Secs. 15.403(g), 15.407(h)(2).

³ Report and Order at para. 39; Appendix C at Sec. I.

The DFS function as described in the present document is not tested for its ability to detect frequency agile [frequency hopping] radars.⁴

We see several reasons for this reservation. First, frequency-hopping radars do not exhibit the same susceptibility to fixed-frequency U-NII devices as do fixed-frequency radars. Second, frequency-hopping radar systems invalidate the assumptions and analysis underlying many decisions concerning DFS. The investigation and research supporting these decisions rest on fundamental assumptions that find their validity in the application and interaction of fixed-frequency radar systems and RLANS. Application of those results to frequency-hopping radars violates the assumptions and yields rules that are too stringent for industry, yet do not add significant protection for Government radars. Third, application of the 30-minute rule to each frequency visited by a frequency-hopping radar will needlessly lock out most or all of the U-NII band.⁵ Fourth, the particular frequency-hopping radar signal proposed for testing is completely artificial, in that it does not correspond to any specific radar system.⁶

Finally, the frequency-hopping radar specified in Appendix C, combined with the in-service monitoring test requirements, raise obstacles to producing a compliant system. The radar characteristics, in the definitions of the pulse repetition frequency and the hopping rate provided in the Report and Order, allow for the observation of three pulses within each frequency dwell:⁷

⁴ EN 301 893 at Section 4.6; Report and Order, Appendix C at Sec. V.

⁵ "A channel that has been flagged as containing a radar system, either by a channel availability check or in-service monitoring, is subject to a non-occupancy period of at least 30 minutes. The non-occupancy period starts at the time when the radar system is detected." 47 C.F.R. 15.407(h)(2)(iv).

⁶ Report and Order, Appendix C at Sec. VI, Table 5, Note 4.

⁷ Report and Order, Appendix C at Sec. VI, Table 5.

Excerpt from Table 5 in FCC 03-287: Parameters of DFS Test Signals

Radar test signal	Pulse repetition frequency PRF [pps]	Pulse width W [μs]	Burst length L [ms] / No. of pulses (Note 1)	Burst Period B [sec] (Note 2)	Hopping Rate (Note 4)
[data omitted]					
Frequency Hopping Radar	3000	1	100/300	10	1 kHz

The Report and Order further requires transmission of a specific test signal during in-service monitoring. Annex A, Table A2 details characteristics of that signal in terms of data rate and packet length. The percentage of transmit time or transmit duty cycle is not specified. Regardless, the requirement of a transmit test signal overlaying the frequency-hopping radar test signal results in a non-zero probability of collision between a single pulse and the transmit test signal. Thus, industry must bear the considerable burden of detecting a radar signal that may provide two or fewer received pulses while minimizing noticeable interruptions to users.

CONCLUSION

For the reasons set out above, GSPN requests clarification (or reconsideration, if necessary) that the DFS function in a U-NII device is not required to detect and avoid frequency-hopping radars. Because they are not susceptible to harmful interference from fixed-frequency sources, these radars should not pose a significant impediment to consensus between industrial and governmental concerns.

In the alternative, if the Commission intended to bring frequency-hopping radars within the DFS requirement, then we request reconsideration of the applicable radar test signal and the definition of testing success. These issues should be delegated the joint industry/Government 5

GHz Project Team for resolution, and certification requirements should be limited to fixed-frequency radar systems until the Project Team reaches a decision.

Respectfully submitted,

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